

REMARKS

Responsive to the outstanding Office Action, applicant has carefully studied the Examiner's rejections and the comments relative thereto. Favorable reconsideration of the application is respectfully requested in light of the amendments and following detailed arguments.

In the amendment, claims 18, 22-24, 31 and 36 were amended, and claims 26 and 27 were canceled. It is submitted that no new matter has been entered into the claims through these amendments.

REJECTIONS UNDER 35 USC §112, second paragraph

The Examiner rejected claims 18-37 for an extensive list of objections under 35 USC 112 second paragraph. Applicants respond as follows.

With respect to paragraph A), the term "branched" has been removed from "branched graft polyamide". It is believed that the removal of this term removes any ambiguity which may have existed.

With regard to paragraph B, section B1 of claim 18 has been amended to explicitly state that it is number average molecular weight referred to.

With regard to paragraph C) use of this phrase in claim 18 has been amended to conform with its use in later claim, thus correcting this typographical error throughout.

With regard to paragraph D), it is respectfully pointed out that for the parts as stated for the components A and B "parts by weight" is now clearly used throughout claim 18.

With regard to paragraph E), claims 22 and 23 and have been rewritten in classic markush form "selected from the group consisting of a, b and c. It is therefore believed that these claims are now clear. Claim 18 has been amended to include the subject matter of previously pending claim 27 and was amended as mentioned above.

With regard to paragraph F), it is believed that this rejection is moot in light of the amendments to claim 18.

With respect to paragraph G), claim 24 clearly has been amended to show that the phrase refers to a temperature relative to the melting point of the material.

With respect to paragraph H), claim 26 has been canceled herein rendering the rejections thereagainst moot.

With respect to paragraph I), claim 27 has been canceled herein and the subject matter incorporated into claim 18. These abbreviations reflect standard nomenclature rules, which were illustrated in the attachments submitted with the prior amendment. PA 6I (a typographical error from claim 27 was corrected in claim 18) refers to a polyamide derived from hexamethylene diamine (hence, 6) and isophthalic acid (hence I). PA MXDI is derived from m-xylylenediamine (MXD) and isophthalic acid. PA MACM12 is derived from 3,3'-dimethyl-4,4' – bisaminodicyclohexyl methane (MACM) and isophthalic acid. PA PACM12 is derived from bis(p-aminocyclohexyl) methane (PACM) and dodecanedioic acid (12). These were defined in Table 1.1 of the nylon plastics handbook as well as table A.3 of ISO 1874-1 which were submitted with the last response. Rules of nomenclature were also repeated on page 5 of the handbook and throughout the ISO standard. It is respectfully submitted that these nomenclatures are extremely standardized, and that one skilled in the art would immediately identify the compounds identified therein.

With respect to paragraph J), this claim has been amended to markush formatting consistent with that in the remainder of the claims.

With respect to K) MXDA and PCDA have been amended to MXD and PXD respectively. One skilled in the art would recognize that in the prior language the "A" referred to "amine" and are generally used as synonyms for the new abbreviations. However, to insure clarity they have been amended as noted above. MXD refers to m-xylylenediamine, as shown in the above cited references, and PXD refers to p-xylylenediamine. Again, these are consistent with standard nomenclature as shown in the nylon plastics handbook and the referenced ISO standard.

In view of the above it is respectfully submitted that the Examiner's rejections have been addressed and that these claims are allowable over the provisions of USC 112, second paragraph. Reconsideration and withdrawal of the rejections thereagainst are respectfully requested.

REJECTIONS UNDER 35 USC §112, first paragraph

The Examiner again rejects all of the pending claims under 35 USC 112, first paragraph.

As noted in regard to the rejections under 35 USC 112, second paragraph, the claims have been corrected to refer to "polyamino" acid chains and not to "polyamide", which was entered due to a typographical error. It is submitted that polyamino chain is defined in the application. The polyamides used herein are referenced throughout the specification.

It is also noted that, when looking at the examples of the present invention, ε-CL is specifically identified as a polyamino acid chain to be grafted on the maleimide of the general formula I. This again shows that polyamino chains are what is intended in the application and shows support for its disclosure.

However, it is again noted that it is completely impractical to disclose every possible permutation of a class of compounds, especially if the compounds being referred to - polyamides - are a well known class of polymers. The incorporation by reference that the Examiner refers to is not relevant in light of the forgoing.

In view of the above, reconsideration and withdrawal of the rejections under 35 USC 112, first paragraph are respectfully requested.

REJECTIONS UNDER 35 USC §103

The Examiner states that it would have been obvious for the person skilled in the art to combine US '266 (Weber) with the two Schmid documents (EP '648 and '115) thus arriving at the claimed subject matter of the present application. The Examiner argues that component C of the US '266 would correspond to the component A)b)1 of the present independent claim, whereas component B of US '266 would correspond to component A)b)2. Further, he states that compound A also would encompass amorphous polyamides as claimed by feature A)c) of claim18.

It is first noted that none of the polyamides identified in claim 18 (previously pending claim 27) are expressly identified in the Weber reference. The Examiner, however, maintains his previous opinion that the amorphous polyamides which are

subsumed under feature Ac) of present invention cannot be distinguished from the compounds Aa) and therefore come under the compounds A) described by Weber (partly crystalline polyamide) by stating that with "partly crystalline polyamides" the other part stringently has to be amorphous. Applicants assert this is not the case.

First of all, sections Aa) and Ac) of the claims are worded differently, to support the fact that these 2 sections are referring to differing components, not identical. Secondly, it is respectfully submitted that the Examiner is incorrect in stating that partly crystalline polyamides (compounds A, Weber) would also encompass the compounds Ac) of present invention. It is admittedly correct that partly crystalline polyamides comprise a further part which is not crystalline, i.e. amorphous. However, claimed feature Ac) clearly states "amorphous polyamides" and not "partly amorphous polyamides", i.e. polyamides which are completely amorphous and do not have any crystallinity at all. Furthermore, the person skilled in the art is very well able to distinguish between partly crystalline/semicrystalline polyamides and amorphous polyamides which are well established terms in the polyamide chemistry.

During cooling from melt, partly crystalline polyamides establish crystalline domains (phase transition of 1st order). In general the complete melt does not solidify into a crystalline state, but also amorphous domains are formed. The ratio between the crystalline and amorphous domains is determined by the chemical nature of the polyamide and the conditions of cooling.

In contrast thereto, amorphous polyamides solidify in a hyaline or glassy state from the melt. Therefore, in the solid state there is no long range order of the repeating units at all. The transition between the solid and the liquid state is described via the glass transition temperature Tg and therefore is a phase transition of 2nd order. In general, amorphous polyamides comprise monomeric units which preclude a crystalline alignment of the polymeric chains.

Support for the definition of "amorphous" is provided from a copy of a definition of this term according to "Encyclopedic Dictionary of Polymers", wherein it is clearly stated that amorphous polymers lack crystallinity.

The Weber reference discloses also blends of polyamides to be used for compound A) yet which the proviso that all members of the blends are partly crystalline.

A blend of a semicrystalline and an amorphous polyamide is therefore not encompassed by the teaching of Weber.

Thus, the complete teaching of Weber does not disclose amorphous polyamides, therefore the criterion Ac) of present invention is not met. This feature is not shown in any of the applied secondary references. Therefore, an essential claimed feature of present invention is not met by the combination of documents cited by the Examiner, as none of the applied references disclose this feature.

It is therefore believed that independent claim 18 distinguishes over the applied art of record.

#### SUMMARY

In view of the forgoing, independent claim 18 is believed to be allowable over the applied art of record, and action towards that end is respectfully requested. Claims 19-25 and 28-37, which depend directly or indirectly from independent claim 18 are believed to be allowable based, at least, upon this dependence.

Should the Examiner wish to modify the application in any way, applicant's attorney suggests a telephone interview in order to expedite the prosecution of the application.

Respectfully submitted,



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# Encyclopedic Dictionary of Polymers

Volume 1  
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With 710 Figures and 38 Tables



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**A**

**Amino resin** (polyalkene amide, aminoplast) *n.* A generic term for a group of nitrogen-rich polymers containing amino nitrogen or its derivatives. The starting amino-bearing material is usually reacted with formaldehyde to form a reactive monomer that is condensation-polymerized to a thermosetting resin. Included amino compounds are urea, melamine, copolymers of both with formaldehyde, and, of limited use, thiourea, aniline, dicyandiamide, toluenesulfonamide, benzoguanidine, ethylene urea, and acrylamide. Not included, because properties warrant separate classification, are polyamides of the nylon type, polyurethanes, polyacrylamide, and acrylamide copolymers. The most important members of the amino-resin family are melamine-formaldehyde and urea-formaldehyde resins. The basic resins are clear, water-white syrups or white powdered materials that can be dispersed in water to form colorless syrups. They cure to high temperatures with appropriate catalysts. Molding powders are made by adding fillers to the uncured syrups, forming a consistency suitable for compression and transfer molding. Amino resins are usually cured by baking and are blended with other resins (e.g., alkyds or epoxies). Amino resins are also cured by chemical means at normal air temperature, e.g., wood finishes.

**AMMA** *n.* Abbreviation for copolymers of acrylonitrile and methyl methacrylate. In Europe, written A/MMA.

**Ammeter** \ə-mē-tər\ [ampere + -meter] (1882) *n.* Instrument for measuring the strength (amperage) of electric currents.

**Ammine** \ə-mēn, ə'-mēn\ [ISV, ammonia + <sup>2</sup>-ine] (1897) *n.* The name given to ammonia, NH<sub>3</sub>, when it serves as a ligand.

**Ammonia cure** *n.* A modification of a hot air pressure cure for rubber, often used for

curing, in which ammonia gas is used to accelerate vulcanization and to prevent the deteriorating effect of air.

**Ammonium caseinate** *n.* Casein solubilized by ammonium hydroxide generally employing a hot water presoak.

**Ammonium soaps** *n.* Soaps formed by reaction of ammonia with the higher molecular weight fatty acids, such as ammonium oleate, linoleate, stearate, etc., used as wetting or emulsifying agents.

**Amoora oil** *n.* Semidrying vegetable oil with an iodine value of 135 and Sp gr of 0.939/15°C.

**Amorphous** \ə-'môr-fəs\ [Gk *amorphous*, fr. *a-* + *morphe* form] (ca. 1731) *adj.* Devoid of crystallinity or stratification. Most plastics are amorphous at processing temperatures, many retaining this state under all normal conditions. Lacking crystallinity.

**Amorphous domain** (and crystalline domains) *n.* Amorphous or noncrystalline portions of a solid polymer; conversely, crystalline domains are nonamorphous. A single crystalline polymer chain can possess amorphous regions (domains), e.g., polyethylene.

**Amorphous nylons** *n.* When unsymmetrical monomers are used to synthesize polyamides (Nylons), the normal ability of the chains to crystallize can be disrupted and amorphous (often transparent) polymers are formed.

**Amorphous silica** *n.* SiO<sub>2</sub>. A naturally occurring or synthetically produced pigment, characterized by the absence of pronounced crystalline structure, and which has no sharp peaks in its X-ray diffraction pattern. It may contain water of hydration or be an anhydrous type. It is used as an extender pigment, fatting agent, and as a desiccant in metal flake and metal powder coatings.